MULTICORE SOLDERS LIMITED

Kelsey House • Wood Lane End • Hemel Hempstead
Hertfordshire • HP2 4RQ • UK
Telephone: +44 (0) 1442 233233 • Fax: +44 (0) 1442 69554
Telex: 82363 KELSEY G

Farnell Order Code 419539, 629510 Data Sheet No CSH00116

REVISION

Material Safety Data Sheet

Product Information

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING.

Product Name — Multicore Tin/Lead Solder Alloys

Multicore solder wire is identified by the alloy codes shown below, under the word 'Type' on the label it will state solid wire.

Alloy: TIN/LEAD:
5/95, L-PbSn5, 10/90, S-Pb90Sn10, 15/85, 20/80, L-PbSn20, 25/75, 30/70, S-Pb70Sn30, 35/65, S-Pb65Sn35, 40/60, Sn40, S-Pb60Sn40, 45/55, S-Pb55Sn45, 50/50, Sn50, S-Pb50Sn50(E), 59/41, 60/40, Sn60, S-Sn60Pb40(E), 60HP, 63/37, Sn63, 63HP, S-Sn63Pb37(E), 70/30, L-Sn70Pb, 80/20, 85/15, L-Sn90Pb

TIN/LEAD/SILVER:
2.5S, Sn10, LMP, S-Sn62Pb36Ag2, Sn62, HMP, S-Pb93Sn5Ag2, Alloy 45, S-Sn60Pb36Ag4

TIN/LEAD/BISMUTH:
Bi3, Bi8, Bi14

TIN/LEAD/BISMUTH/SILVER:
Bi10

TIN/LEAD/ANTIMONY:
Multiflow, 29 Ant, Grade D, S-Sn60Pb40Sb, L-Sn54Pb(Sb), S-Pb50Sn50Sb, S-Pb58Sn40Sb2, L-PbSn40(Sb), L-PbSn35(Sb), L-PbSn33(Sb), L-PbSn30(Sb), L-PbSn25(Sb), L-PbSn5(Sb)

TIN/LEAD/COPPER:
SAVBIT No.1, *S-Sn50Pb49Cu1, SAVBIT No.6, S-Sn60Pb38Cu2, GS60, L-Sn60PbCuP

Manufacturer — Multicore Solders Ltd, Kelsey House, Wood Lane End, Hemel Hempstead, Herts, HP2 4RQ, England.
Telephone +44 (0)1442 233233.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Alloy	Liquidus	Solidus	Alloy Density	Lead Content (max. %)
5/95, L-PbSn5	315	300	10.8	95.4
L-PbSn5(Sb)	315	300	10.8	95.4
HMP, S-Pb93Sn5Ag2	301	296	11.1	92.5
2.5S	300	300	11.1	92.5
10/90, S-Pb90Sn10	299	275	10.5	90.0
Sn10	299	268	10.6	88.0
15/85	288	227	10.2	85.6
20/80, L-PbSn20	275	183	10.0	80.6
Alloy 45	270	179	10.1	80.6
25/75	265	183	9.8	76.0
30/70, S-Pb70Sn30	255	183	9.7	70.6
Grade D	248	183	9.6	69.2
Multiflow, 29 Ant	248	185	9.6	71.1
35/65, S-Pb65Sn35	245	183	9.5	65.1
40/60, Sn40, S-Pb60Sn40	234	183	9.3	60.7
S-Pb58Sn40Sb2	230	183	9.2	58.7
45/55, S-Pb55Sn45	224	183	9.1	55.7
Bi10	220	136	10.1	63.5
Savbit No.1, S-Sn50Pb49Cu1	215	183	8.9	48.4
50/50, Sn50, S-Pb50Sn50(E)	212	183	8.9	50.7
Bi3	195	175	8.9	47.7
Bi8	190	170	9.1	50.5
Savbit No.6, S-Sn60Pb38Cu2	190	183	8.5	38.7
59/41	188	183	8.5	41.3
60/40, Sn60 } 60HP, S-Sn60Pb40(E) }	188	183	8.5	40.8
63/37, Sn63 } 63HP, S-Sn63Pb37(E) }	183	183	8.4	36.8
L-PbSn25(Sb)	265	183	9.8	75.3
L-PbSn30(Sb)	255	183	9.7	70.4
L-PbSn33(Sb)	249	183	9.6	67.4
L-PbSn35(Sb)	245	183	9.5	65.4
L-PbSn40(Sb)	234	183	9.3	60.4
S-Pb50Sn50Sb	212	183	8.9	50.4
L-Sn54Pb(Sb)	207	183	8.6	46.4
S-Sn60Pb40Sb	188	183	8.5	40.4
GS60, L-Sn60PbCuP	188	183	8.5	40.4
LMP, Sn62, S-Sn62Pb36Ag2 } S-Sn60Pb36Ag4 }	179	179	8.5	36.5
Bi14	168	136	9.2	44.5
70/30, L-Sn70Pb	188	183	8.2	30.5
80/20	200	183	7.9	20.5
85/15	212	183	7.7	15.5
L-Sn90Pb	215	183	7.6	10.5

3. HAZARDS IDENTIFICATION

Solder alloys containing lead give off negligible lead fume at normal soldering temperatures and at temperatures up to 500°C. However, if solder alloys are overheated, lead fumes will be given off. Lead is harmful if absorbed into the body and can cause lead poisoning, birth defects and other reproductive harm.

4. FIRST-AID MEASURES

Inhalation

Providing temperature is below 500°C these products will no cause any adverse effects. Any flux used with the products may generate irritating or possibly harmful fumes. The safety data sheet of the flux should be read for possible effects and the appropriate first aid.

Ingestion

Wash out mouth with water give water to drink and seek medical advice.

Skin Contact

Lead may be tranferred to the mouth via contaminated skin.
Wash hands with soap and warm water after handling solder.

Eye Contact

Fluxes used with the products may generate irritating fumes. The safety data sheet for the flux should be read for possible symptoms and appropriate first aid.

5. FIRE FIGHTING MEASURES

Extinguishers Suitable - dry chemical, carbon dioxide, water spray or foam.
Unsuitable - water jet.
High temperatures (over 500°C) may produce heavy metal dust, fumes and/or vapours.

Fire fighters should wear full protective clothing and breathing apparatus operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Not applicable.

7. HANDLING AND STORAGE

The fumes produced during soldering should be extracted away from the breathing zone of the operators. Avoid inhaling fumes from any flux used with these products. Ensure that the general area is well ventilated. Wash the hands with soap and warm water after handling solder, particularly before eating, drinking or smoking. These products should be stored in a cool dry area out of reach of children and away from food and drink.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

In normal soldering operations, where the temperature is below 500°C, the exposure to lead will be minimal and the risks from the toxic effects of lead insignificant. (Ref: The Control of Lead at Work Regulations Approved Code of Practice).

Extraction should be provided to control exposure to the fumes from any flux used with these products, reference should be made to the flux safety data sheet for suitable methods of control.

Occupational Exposure Limits

Substance	Exposure Limit (8 hour TWA)
Lead (from fume)	0.15 mg/m³ *

* From Appendix 1 of the HSC Approved Code of Practice supporting The Control of Lead at Work Regulations 1980.
EH28 Control of Lead: air sampling techniques and strategies

Biological Standards

Blood lead

Employees should be under medical surveillance if the risk assessment made under the Control of Lead at Work Regulations indicates they are likely to be exposed to significant concentrations of lead, or if an Employment Medical Advisor or appointed doctor certifies an employee should be under medical surveillance.

A woman employed on work which exposes her to lead should notify her employer as soon as possible if she becomes pregnant. The Employment Medical Advisor/Appointed Doctor should be informed of the pregnancy.

Under the Management of Health and Safety at Work (Amendment) Regulations 1994, employers are required to assess the particulat risks to health at work of pregnant workers and workers who have recently given birth or who are breast feeding. Respiratory protection will be required if local exhaust ventilation does not adequately control the fumes. Eye protection such as safety glasses or goggles may be required to protect the eyes from the flux.

9 . PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Silver-white to grey alloy wire

Odour: Odourless at ambient temperatures

Boiling range: The vapour pressure of lead may be significant above 500°C

Solubility: In water Insoluble

10. STABILITY AND REACTIVITY

Conditions to Avoid

If solder is exposed to temperatures over 500°C then lead dust, fume and/or vapours may be produced.

Materials to Avoid

Solder will react with concentrated nitric acid to release poisonous fumes of nitric oxide, this will in turn be oxidised to nitrogen dioxide, a red gas with a pungent odour. If personnel are extensively exposed to these gases then immediate medical attention should be sought, as symptoms can be delayed for a considerable time period and can be fatal.

11. TOXICOLOGICAL INFORMATION

Acute

Lead can cause weakness, vomiting, loss of appetite, convulsions stupor and possibly coma.

Chronic

Lead can cause weakness, insomnia, hypertension, headache and possible paralysis. Chronic overexposure to lead may result in damage to the blood-forming, nervous, urinary and reproductive systems.

Lead is classified as a 2B carcinogen by the IARC (1987), evidence for carcinogenicity is adequate in animals but inadequate in humans.

Severe lead toxicity has long been known to cause sterility, abortion and neonatal mortality and morbidity.

Routes of Exposure

Inhalation

This is the main potential route of exposure for flux fumes.
Providing soldering temperature is below 500°C the amount of lead in the fume should be negligible.

Ingestion

This is not normally regarded as an industrial hazard, but lead can be transferred from the skin onto food, cigarettes etc. if a high standard of personal hygiene is not exercised.

Skin contact

The absorption of lead through the skin is not significant.

Eye contact

The fumes of any flux used with these alloys may irritate the eyes.

12. ECOLOGICAL INFORMATION

Lead is not degradable and will persist in the environment. Lead is insoluble in water and is not attacked by most inorganic acids and bases.

13. DISPOSAL CONSIDERATIONS

Wherever possible scrap solder should be sent for recovery of metal. If waste needs to be disposed of, disposal should be in accordance with local and national regulations.

14. TRANSPORT INFORMATION

Solder is not classified as a hazardous material for transport.

15. REGULATORY INFORMATION

Classification according to the Chemicals (Hazard Information and Packaging for Supply) Regulations 1994:

Solder in wire and bar form is considered to be an article and hence is not subject to the above regulations.

However, it is recommended that the following precautionary statements appear on the label:

Contains lead which may harm your health.
Lead can cause birth defects and other reproductive harm.
Regulations forbid the use of lead containing solder in any public or private drinking water supply system.
After handling solder, wash hands with soap and water before eating, drinking, or smoking.
Keep out of reach of children.

Applicable EC Directives

Dangerous Substances Directive 67/548/EEC as amended by Directive 92/32/EEC

Dangerous Preparations Directive 88/379/EEC as amended by Directive 90/492/EEC

Council Directive 80/1107/EEC on the protection of workers from the risk related to exposure to physical, chemical and biological agents at work

Applicable UK Legislation

The Control of Lead at Work Regulations 1980

The information presented in this safety data sheet is accurate to the best knowledge and belief of Multicore Solders Ltd. As we cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products will be used, this safety data sheet cannot constitute the user's assessment of workplace risk. Users are advised to make their own tests to determine the safety and suitability of each product or product combination for their own purposes.

16 OTHER INFORMATION

Recommended Uses

This safety data sheet covers a range of solder alloys, (bar, wire and anodes).

Reference should be made to the Multicore Technical Data Sheets or to the Multicore Technical Sales Team for further information.

UK Further Detailed Guidance

HS(G)37: An Introduction to Local Exhaust Ventilation, HSE
EH28: Control of Lead at Work: Air Techniques and Strategies, HSE
EH40: Occupational Exposure Limits, HSE (Revised annually)
Successful Health and Safety Management, HSE
Control of Lead at Work: Approved Code of Practice. (Revised June 1985)

This safety data sheet has been produced to take into account the Chemicals (Hazard Information and Packaging for Supply) Regulations 1994, (Commission Directive 91/155/EEC)

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Revised in order to include alloy 29 Ant